# Phase 1 Heritage Impact Assessment

## Farm Orange Fall no 16 Agricultural Development, Augrabies, Northern Cape Province

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**Compiled for:**

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**SUMMARY**

The proposed development footprint is underlain by palaeontologically insignificant intrusive rocks of the Namaqua-Natal Province that are capped by palaeontologically sterile superficial deposits (Kalahari Group calretes and sandy soils). As far as the palaeontological heritage is concerned, the proposed development may proceed with no further palaeontological assessments required. The terrain is not considered archaeologically vulnerable, and there are no major archaeological grounds to suspend the proposed development, provided that all excavation activities are confined to within the confines of the development footprint. The study area is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

**INTRODUCTION**

A Phase 1 Palaeontological Impact Assessment was carried out for an approximate 42ha already established agricultural development as well as a newly proposed 53ha agricultural development on the Farm Orange Fall 16 near the Augrabies Falls National Park in the Northern Cape Province (**Fig.1**).

1 : 50 000 scale topographic map 2820CB Augrabies

1 : 250 000 scale geological map 2820 Upington

The 100 ha study area is located about 6.5 km due south of the southern boundary of the Augrabies Falls National Park and about 8 km due west of Augrabies Town (**Fig. 2**). Site coordinates of the proposed development footprints are as follows:

A) 28°39'37.65"S 20°19'58.34"E
B) 28°39'56.82"S 20°20'27.17"E
C) 28°39'48.70"S 20°20'34.42"E
D) 28°40'1.21"S 20°20'53.22"E
E) 28°40'21.54"S 20°20'36.58"E
F) 28°39'51.16"S 20°19'51.36"E

**METHODOLOGY**

The assessment was carried out in accordance with National Heritage Resources Act 25 of 1999 with the aim to assess the potential impact on palaeontological heritage resources that may result from the proposed development. The palaeontological significance of the affected area was evaluated on the basis of existing field data, database information and published literature. This was followed by a field assessment by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Relevant publications,

aerial photographs (incl. Google Earth) and site records were consulted and integrated with data acquired during the on-site inspection.

## BACKGROUND

### Palaeontology

According to the 1 : 250 000 scale geological map of the area (2820 Upington, Council for Geoscience, Pretoria) the proposed development footprint is underlain by well-developed, superficial deposits located on late Mokolian gneiss of the Namaqua-Natal Province considered to include the igneous and metamorphic rocks formed or metamorphosed during the Namaqua Orogeny at -1200 to 1000 Ma ago (**Fig. 3-5**). The underlying rocks are not considered to be palaeontological significant because of the intrusive nature of the strata. The superficial sediments within the study area are made up of Kalahari Group (Quaternary) windblown sand and calcretes. While carbonate-rich overbank deposits associated with large river courses can be potentially fossiliferous, there are currently no records of Quaternary fossil localities within the vicinity.

### Archaeology

The presence of Early, Middle and Later Stone Age artefacts on the Middle Orange River landscape bears evidence of long-term human habitation during prehistoric times (Rudner 1969; Beaumont et al 1995). Archaeological and historical evidence also show that the region was extensively occupied by Khoi herders and San hunter-gatherers during the last 2000 years. Khoi groups such as the Einiqua occupied the area around and east of the Augrabies Falls while the Korana occupied the Middle-Upper Orange River further to the east (Burchell 1822; Penn 2005). A large number of burial cairns were recorded on the Orange River in the Kakamas area on the farns Renosterkop, Rooipad and Augrabies Town and appear to be related to Khoekhoen people, specifically the Einiqua, and historical data shows that a large number of the graves dates to the 18th and early 19th centuries (Dreyer & Meiring 1937; Morris 1992, 1995). Rock engraving sites are known to occur along rocky outcrops within the younger valley fills associated with the Orange River in the region (Van Riet Lowe 1941).

## FIELD ASSESSMENT

The study area consists of low topography terrain capped by an admixture of weathered bedrock (gneiss) as well as Kalahari Group calcretes, sand and sandy soils (**Fig. 6**). Investigation of superficial cuttings and shallow excavation pits located within the study area revealed no evidence of Quaternary fossil remains or exposures (**Fig. 7)**. A few singular, isolated and weathered lithics were recorded as surface occurrences (**Fig. 8**), but no aboveground evidence was found of intact Stone Age archaeological assemblages or sites, prehistoric structures, graves or historically significant structures

older than 60 years. The rest of the study area largely consists of degraded terrain as a result of previous and ongoing farming activities (**Fig. 9**).

**IMPACT STATEMENT AND RECOMMENDATIONS**

The chances of palaeontological impact resulting from the proposed development are considered to be very low to improbable. As far as the palaeontological heritage is concerned, the proposed development may proceed with no further palaeontological assessments required. If, in the unlikely event that localized fossil material is discovered within the superficial overburden during the construction phase of the project, it is recommended that a professional palaeontologist be called in to record and rescue the fossils where necessary.

The study areas are located within a region that has previously yielded ample archaeological as well as historical evidence of the early movement and settlement of Khoi herders and San hunter-gatherers along the Orange River during the last 2000 years. However, the proposed development footprint is located on fairly degraded terrain resulting from modern farming activities. The terrain is not considered archaeologically vulnerable, and there are no major archaeological grounds to suspend the proposed development, provided that all excavation activities are confined to within the confines of the development footprint. The study area is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

**REFERENCES**

Beaumont, P.B., Smith, A.B. & Vogel, J.C. 1995. Before the Einiqua: the archaeology of the frontier zone. In: Smith, A.B. (ed.) Einiqualand: studies of the Orange River frontier. pp. 236-264. Cape Town: University of Cape Town Press.

Burchell, W.J. 1822 Travels in the interior of Southern Africa, Vol 1. London. Longman, Hurst, Rees, Orme, and Brown.

Cornell, D.H. et al. 2006 *The Namaqua-Natal Province*. **In:** M.R. Johnson, C. J. Anhaeusser and R.J. Thomas (Eds). The Geology of South Africa. Geological Society of South Africa.

Dreyer, T.F. & Meiring, A.J.D. 1937. A preliminary report on an expedition to collect Hottentot skulls. Soologiese *Navorsinge van die Nasionale Museum, Bloemfontein* 1(7): 81-88.

Morris, A.G. 1992. *The skeletons of contact: a study of protohistoric burials from the lower Orange River Valley, South Africa*. Witwatersrand University Press.

Morris, A.G. 1995. The Einiqua: an analysis of the Kakemas skeletons. In: Smith, A.B. (ed.) *Einiqualand: studies of the Orange River frontier*. pp. 110 - 164. Cape Town: University of Cape Town Press.

Penn, N. 2005. *The Forgotton Frontier. Colonist and Khoisan on the Cape's morthern frontier in the 18th century*. Juta and Company Ltd.

Rudner, J. 1979. The use of Stone Artefacts and Pottery among the Khoisan Peoples in historic and protohistoric times. *South African Archaeological Bulletin* 34 (129): 3 – 17.

SAHRA, 2005. Minimum Standards for the Archaeological and the Palaeontological

Components of Impact Assessment Reports.

Van Riet Lowe, C. 1941. *Prehistoric Art in South Africa*. Archaeological Series No. V. Bureau of Archaeology, Dept. of the Interior. Pretoria.

**DECLARATION OF INDEPENDENCE**

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project and have no conflicting interests in the undertaking of the activity.

19 / 03 / 2019

## FIGURES

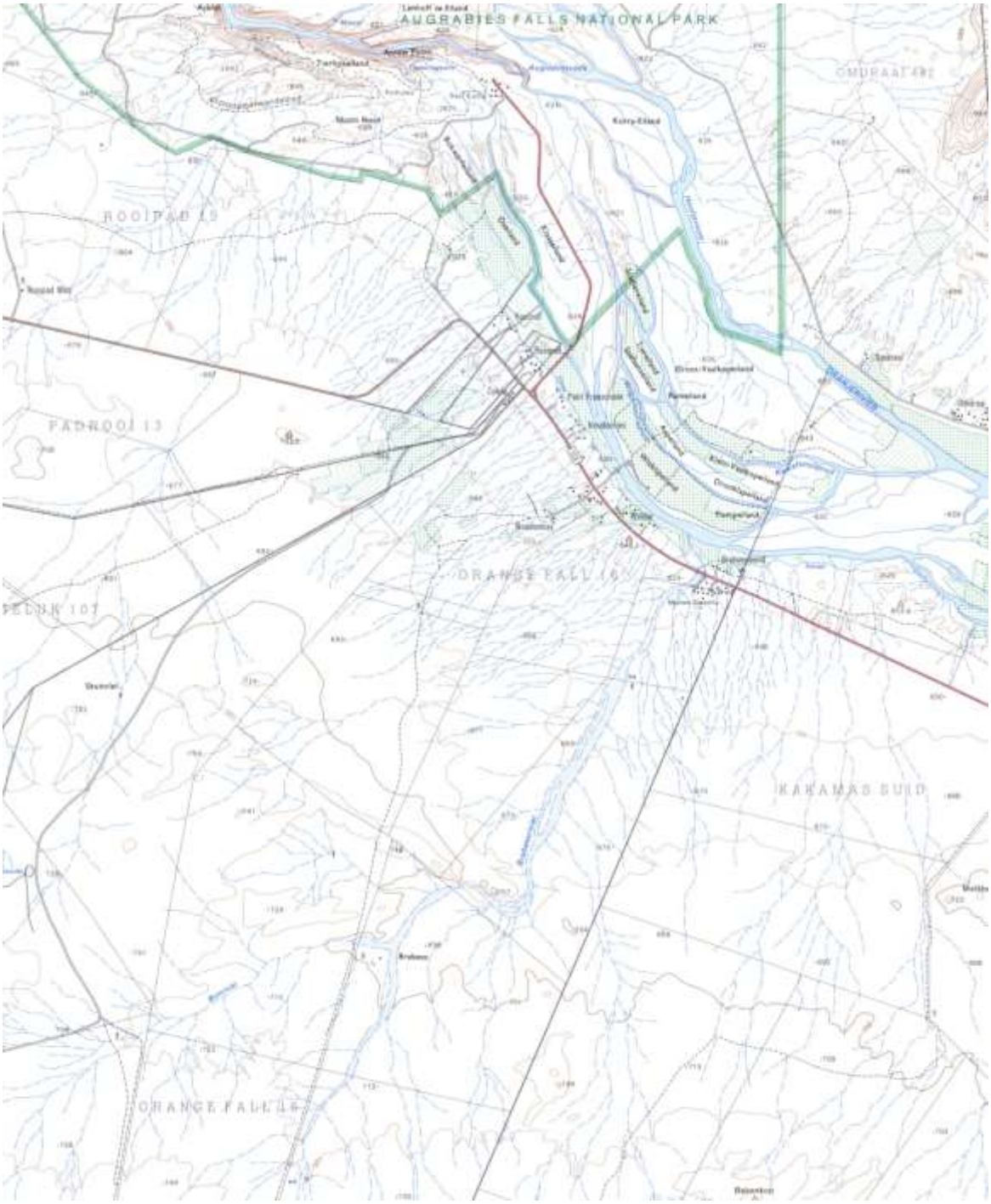
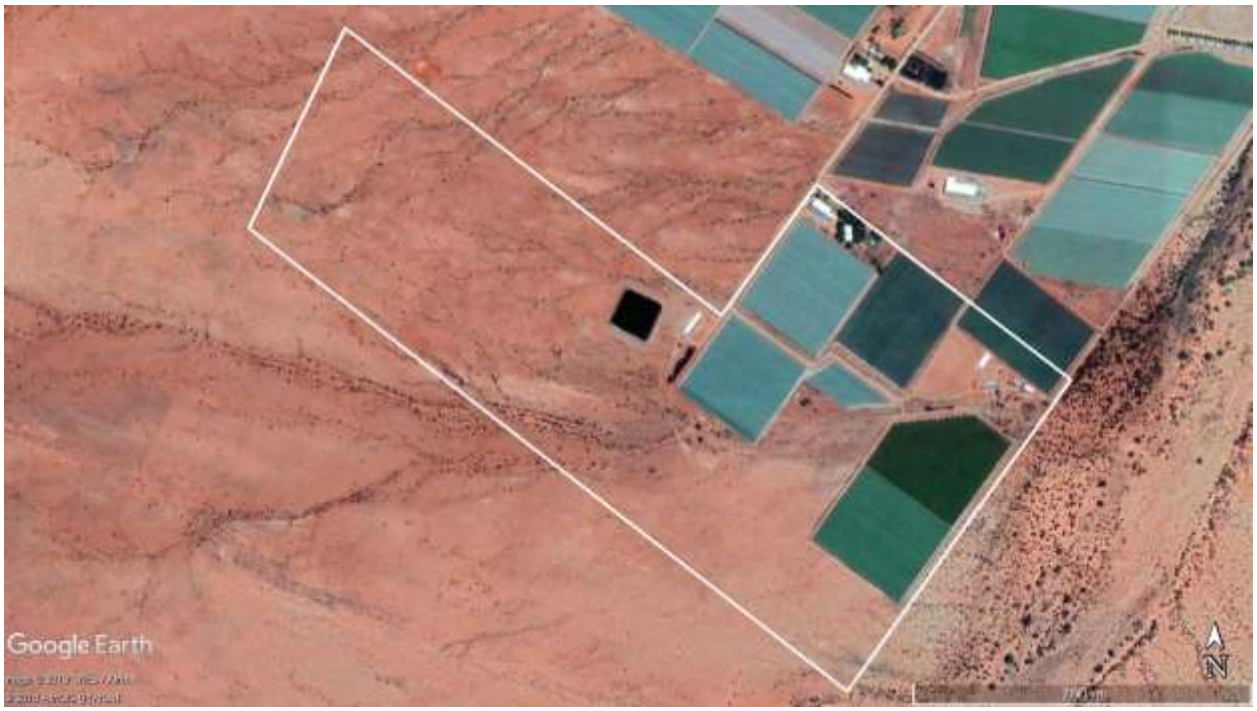



**Figure 1: Map of the proposed footprint (portion of 1:50 000 scale topographic 2820CB Augrabies)**


**Figures 2: Aerial view and layout of the development footprint.**



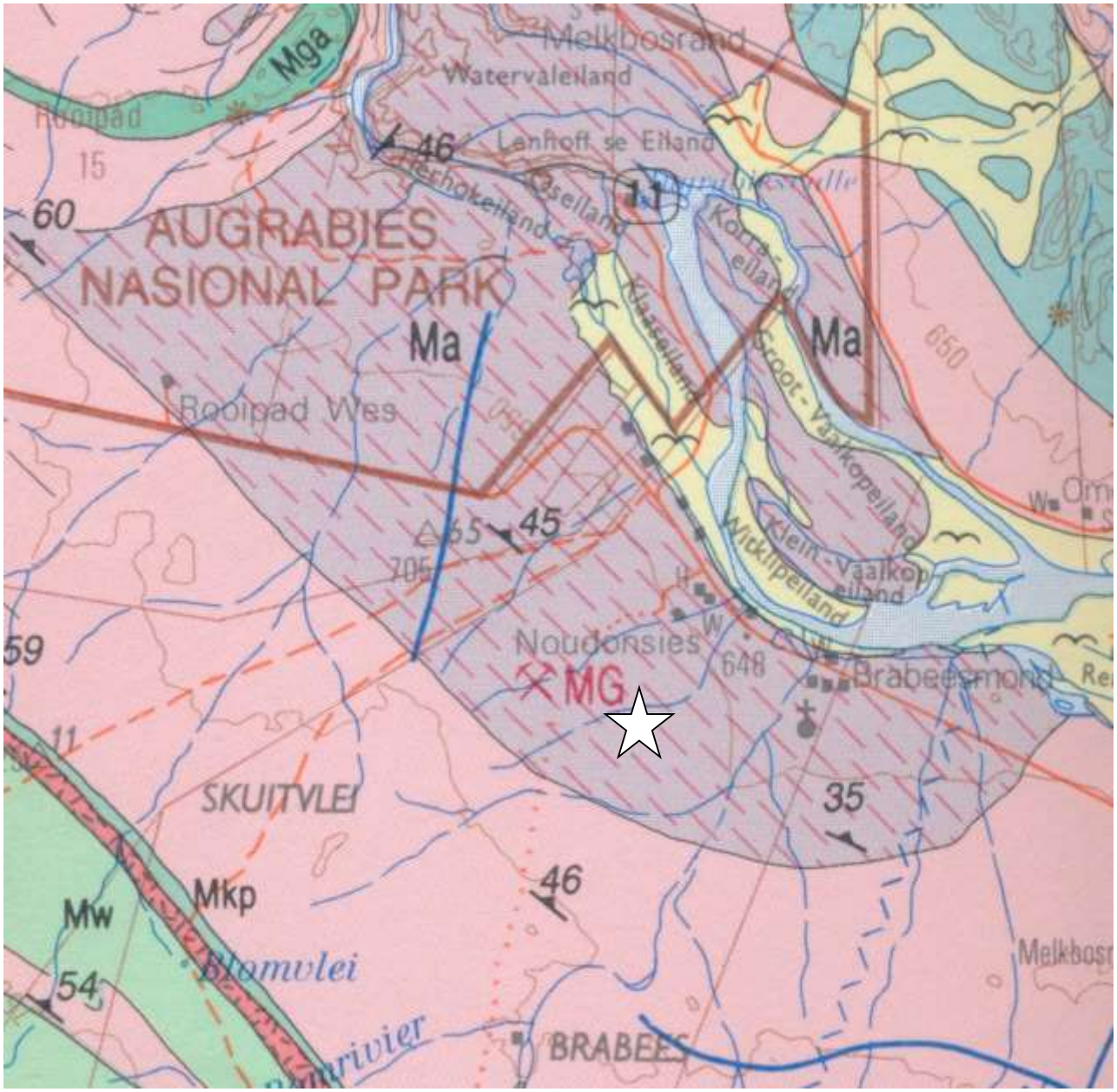



**Figure 3: Portion of 1:250 000 scale geological map 2820 Upington showing the underlying geology of the site (white star) represented by late Mokolian gneiss of the Namaqua-Natal Province (Ma).**

**Figure 4: Undifferentiated gneiss exposure.**

**Figure 5: Granitoid outrop near the west-northwestrn boundary.**

**Figure 6: Superficial sediments represented by well-developed**

**Figure 7: Unconsolidated superficial deposits made up of coarse sand and rubble matrix.**

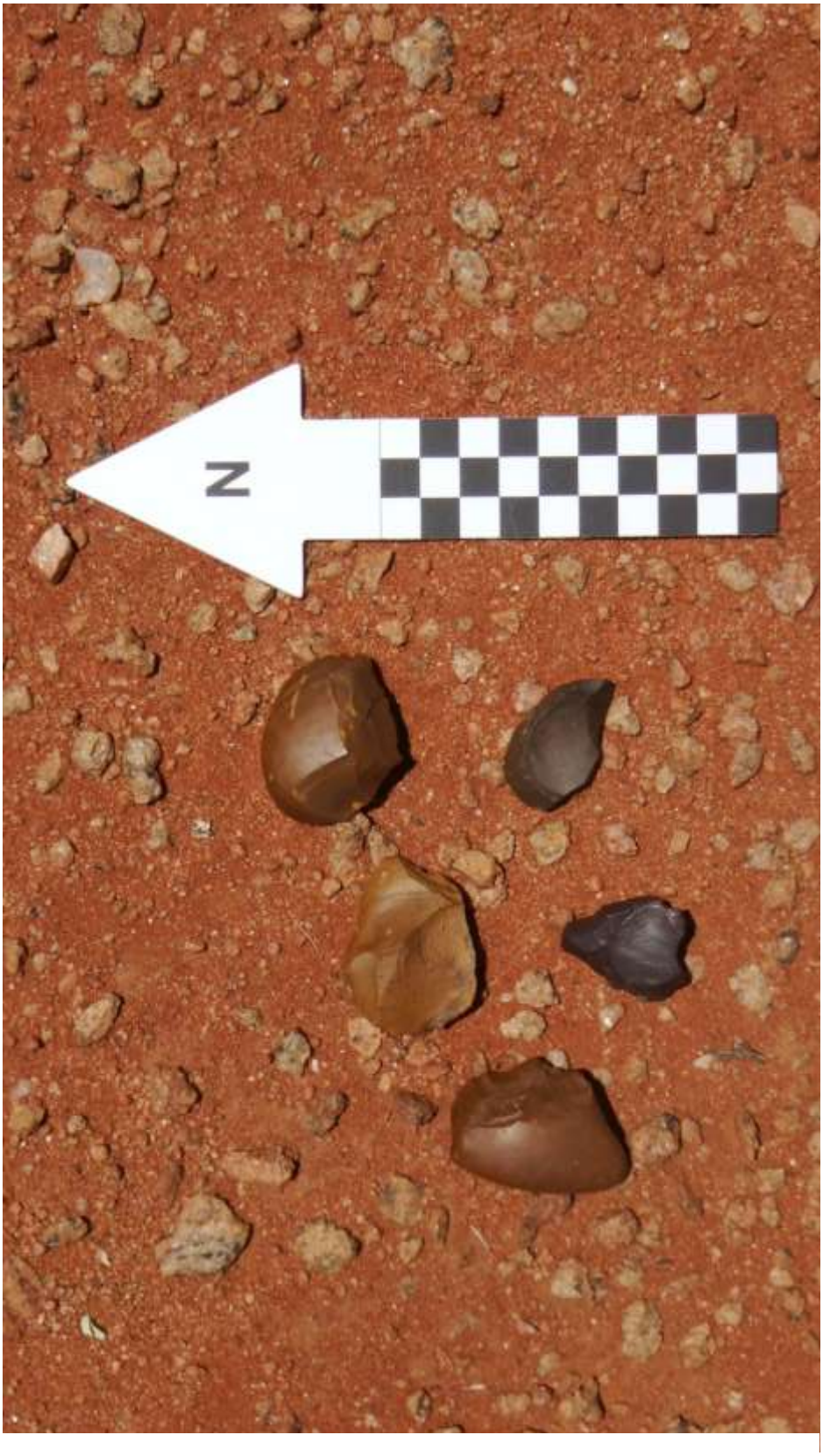



**Figure 8: Isolated and weathered lithics recorded as surface occurrences.**

**Figure 9 Structures and agricultural features associated with ongoing farming activities.**